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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,690	Applicant(s) OLDFIELD, ANDREW SIMON	
	Examiner PAMELA WEISS	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-7,9-11,15,19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-7,9-11,15,19 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 18, 2009 has been entered.

Claim Objections

2. Claim 15 is objected to because of the following informalities. The claim recites "...by the addition of an automotive engine oil comprising...." The claim does not state to what the oil is being added (i.e. to the additive/ester or to an engine). Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

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Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 3-7, and 9-10, 15, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (US 6,462,001).

Regarding Claims 15, 4-7, 9-10:

Kenbeek '001 discloses a method of reducing wear in an automotive engine by addition of and automotive engine oil comprising an ester additive and an antiwear system which may be used in multi-grade gear oil with mineral oil or polyalphaolefins (C6 L5-10) automotive engine oil comprising a base oil (C9 L2-4 esters used with other base mineral oils) and an antiwear additive system (C4 L53-55) comprising an ester which is the reaction product of

(a) at least one polyfunctional alcohol (C6 L17) such as pentaerythritol (meeting the limitation of **claim 4** where $n=4$ and R is a C_5 group and falling within the molecular weight range of from 50 to 650);

(b) a dimer fatty acid; (C6 L20-25) and

(c) at least one of an aliphatic dicarboxylic acid having 5 to 18 carbon atoms, an aliphatic monocarboxylic acid having 5 to 24 carbon atoms or 7 to 24 carbons (a

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monocarboxylic acid having from 7 to 22 carbons falling within the claimed range) and an aliphatic monofunctional alcohol having 5 to 24 carbon atoms (C6 L35-40) a monofunctional alcohol having 14 to 24 carbons falling within the claimed range) with the resultant ester having a kinematic viscosity at 100 °C ranging from 500 to 5000 mm²/s or 900-4000 mm²/s (C6 L38-41 KV 30-1000 mm²/s overlapping the ranges of claims 15 and 5) and a non-polarity index (NPI) $NPI = \frac{\text{total number of carbon atoms}}{\text{molecular weight number of carboxylate groups} \times 100}$ of at least 500 or at least 900.

Kenbeek discloses the claimed composition made in the same or similar manner as the claimed composition, it will intrinsically possess the same physical characteristics including NPI value of at least 500 and at least 900 meeting the limitations of **claims 15 and 6** and a molecular weight of at least 3000 of **claim 7**. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Kenbeek '001 discloses the ester will have a kinematic viscosity at 100°C of from 30 to 1000 cSt overlapping the range of **claim 5** of 900 to 4000 mm²/s (C4 L16-24) See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)."

Kenbeek '001 discloses the dimer fatty acid having a dimer content of 95% or more (C3 L52-57) meeting the limitation for a dimer fatty acid having a dimer content of greater than 94%.

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Kenbeek '001 also discloses that additional additives may be incorporated into the lubricant composition such as sulphur or phosphorus containing EP/AW additive which are well known in the art. (C4 L38-45) meeting the limitations of **claims 9-10**.

Kenbeek '001 discloses the ester may be used in base fluids such as polyalphaolefins (C8 L45-50) for a base oil and meeting the limitation for an oil having a phosphorous level of no more than 0.08% (PAO has no phosphorous and other additives are optional and not required). Kenbeek '001 discloses the composition formulation of the complex ester additive with PAO thereby meeting the limitation for adding the ester.

Kenbeek '001 also discloses the composition for use in lubrication application such as gear oils, four stroke oils, functional fluids, transmission oil, automotive oil (meeting the limitation for addition of an automotive engine oil) and industrial gear oil, axle oil, fuel additives, compressor oil, greases, chain oils, metal working and metal rolling applications (C5 L1-10 and (C1 L12-16). Kenbeek '001 discloses the composition may be used as an additive (C4 L54) and is suitable for automotive gear oils, four stroke oils, fuel additives, etc. and multigrade gear oils (C4 L62-68 and C5 L12). Kenbeek '001 discloses the composition is suitable for heavy duty commercial vehicles and for passenger cars (C5 L36-40). Kenbeek discloses the ester lubricating composition overcomes problems associated with other products when used in a process for lubricating two stroke or rotary engines. (C1 L30-35 and C1 L58-68) As such, Kenbeek '001 discloses the method of addition of an automotive engine oil comprising a base oil and the claimed ester.

Kenbeek '001 discloses the claimed composition formed of the reaction of the claimed components which will therefore intrinsically provide anti-wear/wear reduction qualities to the oil and engine to which it is added. "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990)

A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding Claims 3 and 19:

Kenbeek '001 discloses the limitations set forth above. First, it is noted that since component (c) is optional, it need not be present and this limitation is satisfied.

Alternatively, Kenbeek discloses the C₉-C₁₈ dicarboxylic acid (falling within the claimed range of C₅ to C₁₈) is used in dimerized form in an amount of not more than 80% by weight. (C2 L55-63). This leaves the remaining aliphatic 9 to 18 carbon dicarboxylic acid as non dimerized thereby satisfying component (c).

Regarding Claim 21:

Kenbeek '001 discloses the limitations above set forth. Kenbeek also discloses an ester formed with neopentyl glycol as the polyfunctional alcohol (C3 L16-18). Since component (c) is optional, this limitation has been satisfied.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (US 6,462,001) applied to claims 3-7, and 9-10, 15 above further in view of Shaub et al. (US 4,479,883)

Regarding Claim 11

Kenbeek '001 discloses the limitations set forth above. Kenbeek '001 also discloses that additional additives may be incorporated into the lubricant composition such as sulphur or phosphorus containing EP/AW additive which are well known in the art. (C4 L38-45)

Kenbeek '001 does not expressly disclose the further anti-wear additive is zinc dialkyldithiophosphate.

Shaub et al. discloses a lubricating oil composition containing an ester of polycarboxylic acid and glycol with a metal dithiocarbamate improves friction reducing properties while retaining other desired lubricant properties. (C2 L5-16). Shaub discloses the ester to be from a dimer fatty acid and an ethylene glycol (C4 L43-45 and C4 L43). Shaub further discloses the metal dithiocarbamate to be zinc dialkyl dithiophosphate. (C6 L16).

It would have been obvious to a person having ordinary skill in the art at the time of invention to add the zinc dialkyl dithiophosphate to the ester composition of Kenbeek '001 as Kenbeek '001 contemplates an anti-wear additive comprising sulphur and

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phosphorous and doing so would improve the friction reducing properties of the composition of Kenbeek '001 while maintaining the other lubricant qualities.

7. Claim 11 is alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (US 6,462,001) as applied to claims 4-7, and 9-10, 15 above further in view of Papay et al. (US 4,293,432) and Jokinen et al. (US 4,783,274)

Kenbeek '001 discloses the limitations set forth above. Kenbeek also discloses that additional additives may be incorporated into the lubricant composition such as sulphur or phosphorus containing EP/AW additive which are well known in the art. (C4 L38-45) Kenbeek '001 discloses gear oil additive packages commercially available such as by Hitec – Ethyl Corp. or Lubrizol (C4 L38-50)

Kenbeek '001 does not expressly disclose the further anti-wear additive is zinc dialkyldithiophosphate.

Papay et al. discloses a lubricating oil for engines (Abstract) comprising esters as a synthetic oil component (C3 L40-52) and further comprising zinc dihydrocarbyldithiophosphate as a preferred additive (Papay C4 L1-12) Jokinen et al (US 4,783,274) discloses a hydraulic fluid which contains an additive of zinc dialkyldithiophosphate made by Lubrizol (C5 L19-25).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use a commercially available extreme pressure/ anti wear additive which is commercially available such as ZDDP which is available from Lubrizol as ZDDP is a preferred additive in engine oils and comprises phosphorus and sulfur which is expressly contemplated by Kenbeek '001. Further using said additive amounts to

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nothing more than use of a known substance in a known environment to achieve an entirely expected result.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (US 6,462,001) as applied to claim 15 above, and further in view of Young et al. (US 3,202,701)

Regarding Claim 21.

Kenbeek '001 discloses the limitations set forth above. Noting that component (c) is optional, this limitation has been satisfied.

Nonetheless, Kenbeek also discloses an ester formed with neopentyl glycol as the polyfunctional alcohol (C3 L16-18) and a dimer acid and a dicarboxylic acid (P3 L62) and a C9-C18 polyfunctional carboxylic acid. (C2 L56-60).

Kenbeek '001 does not expressly disclose to the oil wherein the resultant ester is the reaction product of the neopentyl glycol with dimer acid and azelaic acid.

Young et al. discloses a complex ester of a mixture of acids and neopentyl glycol which produces a lubricant which remains haze free at low temperatures and has heat stability with good viscosity. (C2 L30-37 and L53) The ester is formed by either a one state or two stage reaction (C4 L10-11). Young et al. discloses that the acid mixtures may comprise dicarboxylic acid and azelaic acid (C2 L56-65).

It would have been obvious to a person having ordinary skill in the art at the time of invention to add azelaic acid of Young et al to the reaction mixture of Kenbeek '001 as Young teaches that said acid is useful in a complex ester mixture and will reduce haze at low temperature and impart heat stability with good viscosity.

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9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (EP 0335013) as evidenced by Marchand et al. (GB1390439) and as evidenced by Croda Product Overview.

Regarding Claims 15 and 6:

Kenbeek discloses a method of reducing wear by the addition of an automotive engine oil comprising a base oil (Abstract and P2 L46-47 synthetic lubricant base) and an antiwear additive system comprising an ester (P2 L52-55 polyester additive) which is the reaction product (P3 L50-58 disclosing the reactants and an esterification process) of

(a) at least one polyfunctional alcohol; (P3 L1 glycol, neopentylglycol)

(b) a dimer fatty acid; and (P2 L52-53 and P3 L60-62)

(c) 2-ethyl hexanol P3 L53 (meeting the claimed carbon range of C₅ to C₂₄ and C₇ to C₂₄) (P3 L6-11) with the resultant ester having a kinematic viscosity at 100 °C ranging from 500 to 5000 mm²/s and a non- polarity index (NPI) NPI = total number of carbon atoms x molecular weight number of carboxylate groups x 100 of at least 500).

Kenbeek discloses the limitations set forth above. Kenbeek discloses the claimed composition. As such, the composition will intrinsically possess the same physical characteristics including the NPI value of at least 500 and at least 900 and a kinematic viscosity of 900-4000mm²/s. (The ester composition of Kenbeek will meet or overlap the claimed kinematic viscosity as evidenced by Marchand discloses an ester used as a lubricant in engines (P1 C2 L57-59) comprising a polyester of dimeric acid and 2,2,-dimethyl-1,3propanediol which has a viscosity of 2840 at 98.9°C (P4 L1-9)).

Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Kenbeek discloses the dimer fatty acid is Pripol 1009 (P3 L47-52). Pripol 1009 has a dimer content of 98% (as evidenced by Croda) meeting the limitation for a dimer content of greater than 94%wt. meeting the claim limitation.

Kenbeek '013 discloses the composition used in a diesel engine (P2 L42-45 Kurt Orbahn testing DIN 51 382 as such it is added to the engine (meeting the limitation for adding). The examiner notes that a diesel engine meets the limitation for an automotive engine). The base oil is an ester lubricant base such as glycerol tri-n-heptanoate, trimethylolpropane, 2-ethylhexyl dodecanoate (P3 L26-33) and the composition will therefore have a phosphorus level of no more than 0.08%.

Kenbeek discloses the claimed composition formed of the reaction of the claimed components which will therefore intrinsically provide anti-wear/wear reduction qualities to the oil and engine to which it is added. "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990)

A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body

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of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hira*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding Claims 3 and 21.

Kenbeek discloses the limitations set forth above. Since the optional component 1(c) is not present, no aliphatic dicarboxylic acid having 5 to 18 carbon atoms is required to be present.

Regarding Claim 4.

Kenbeek discloses the limitations set forth above. Kenbeek also discloses an automotive engine oil wherein the polyfunctional alcohol is a polyol of formula $R(OH)_n$ where n is an integer which ranges from 1 to 10 and R is a hydrocarbon chain of 2 to 15 carbon atoms where the polyol is of molecular weight in the range from 50 to 650. (P3 L52 neopentyl glycol $C_5H_{12}O_2$ MW 104.15 thus falling within the claimed ranges)

Regarding Claim 7.

Kenbeek discloses the limitations set forth above. Kenbeek also discloses an automotive engine oil wherein the resultant ester has an average molecular weight of at least 3000. (P4 L9 average molecular weight was 5900 for example 2).

Regarding Claim 9.

Kenbeek discloses the limitations set forth above. Kenbeek also discloses an automotive engine oil wherein the antiwear additive system further comprises a phosphorus- containing and/or sulphur- containing antiwear additive. (P3 L40-43

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wherein additional adjuncts are added such as antioxidants, anticorrosion, metal deactivators, tricresyl phosphate, etc.)

Regarding Claim 5.

Kenbeek discloses the limitations set forth above. Kenbeek also discloses an additive wherein the reactants are a dimer acid and neopentyl glycol (i.e. 2,2-dimethyl-1,3-propanediol) (P4 L5-6).

Kenbeek discloses the claimed composition it should inherently possess the same physical qualities of kinematic viscosity at 100°C of 900 to 4000 mm²/s. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). This is further evidenced by Marchand which discloses an ester used as a lubricant in engines (P1 C2 L57-59) comprising a polyester of dimeric acid and 2,2-dimethyl-1,3propanediol which has a viscosity of 2840 cSt at 98.9°C. (Note: 2840cSt = 2840 mm²/s) (P4 L1-9)

10. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (EP 0335013) as evidenced by Marchand et al. (GB1390439) and as evidenced by Croda Product Overview as applied to claim 15 above further in view of Papay et al. (US 4,293,432) and Jokinen et al. (US 4,783,274)

Regarding Claims 10 and 11

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Kenbeek discloses the limitations set forth above. Kenbeek also discloses that additional additives may be incorporated into the lubricant composition such as such as antioxidants, anticorrosion, metal deactivators, tricresyl phosphate, etc. (P3 L40-43)

Kenbeek does not expressly disclose the further antiwear additive is both a phosphorus-containing and sulphur-containing additive or wherein the antiwear additive is zinc dialkyldithiophosphate.

Papay et al. discloses a lubricating oil for engines (Abstract) comprising esters as a synthetic oil component (C3 L40-52) and further comprising zinc dihydrocarbyldithiophosphate as a preferred additive (Papay C4 L1-12) Jokinen et al (US 4,783,274) discloses a hydraulic fluid which contains an additive of zinc dialkyldithiophosphate made by Lubrizol (C5 L19-25).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use a commercially available extreme pressure/ anti wear additive which is commercially available such as ZDDP which is available from Lubrizol as ZDDP is a preferred additive in engine oils and comprises phosphorus and sulfur as Kenbeek expressly contemplates additional additives. Further using said additive amounts to nothing more than use of a known substance in a known environment to achieve an entirely expected result.

11. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (EP 0335013) as evidenced by Marchand et al. (GB1390439) and as evidenced by Croda Product Overview as applied to claim 15 above further in view of Shaub et al. (US 4459223)

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Regarding Claims 10 and 11

Kenbeek discloses the limitations set forth above. Kenbeek also discloses that additional additives may be incorporated into the lubricant composition such as such as antioxidants, anticorrosion, metal deactivators, tricresyl phosphate, etc. (P3 L40-43)

Kenbeek does not expressly disclose the further anti-wear additive is both a phosphorus-containing and sulphur-containing additive or wherein the anti-wear additive is zinc dialkyldithiophosphate.

Shaub et al. discloses a lubricating oil composition containing an ester of polycarboxylic acid and glycol with a metal dithiocarbamate improves friction reducing properties while retaining other desired lubricant properties. (C2 L5-16). Shaub discloses the ester to be from a dimer fatty acid and an ethylene glycol (C4 L43-45 and C4 L43). Shaub further discloses the metal dithiocarbamate to be zinc dialkyl dithiophosphate. (C6 L16).

It would have been obvious to a person having ordinary skill in the art at the time of invention to add the zinc dialkyl dithiophosphate to the ester composition of Kenbeek as doing so would improve the friction reducing properties of the composition of Kenbeek while maintaining the other lubricant qualities.

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (EP 0335013) as evidenced by Marchand et al. (GB1390439) and as evidenced by Croda Product Overview as applied to claim 15 above, and further in view of Kenbeek et al. (US 6,462,001B1) hereinafter referred to as Kenbeek '001)

Regarding Claim 19.

Kenbeek EP 0335013 discloses the limitations set forth above which are expressly incorporated herein. Kenbeek discloses an automotive engine oil comprising a base oil (Abstract and P2 L46-47 synthetic lubricant base) and an antiwear additive system comprising an ester (P2 L52-55 polyester additive) which is the reaction product (P3 L50-58 disclosing the reactants and an esterification process) of

- (a) at least one polyfunctional alcohol; (P3 L1 glycol, neopentylglycol)
- (b) a dimer fatty acid; and (P2 L52-53 and P3 L60-62)
- (c) 2-ethyl hexanol P3 L53 (meeting the claimed carbon range of C₅ to C₂₄) (P3 L6-11) with the resultant ester having a kinematic viscosity at 100 °C ranging from 500 to 5000 mm²/s and a non-polarity index (NPI) $NPI = \frac{\text{total number of carbon atoms} \times \text{molecular weight number of carboxylate groups}}{100}$ of at least 500).

Kenbeek discloses the dimer fatty acid having a dimer content of 95% or more (C3 L52-57) meeting the limitation for a dimer fatty acid having a dimer content of greater than 94%.

Kenbeek does not expressly disclose:

- (c) at least one of an aliphatic dicarboxylic acid having 5 to 18 carbon atoms with the resultant ester having a kinematic viscosity at 100 °C ranging from 500 to 5000 mm²/s and a non-polarity index (NPI) $NPI = \frac{\text{total number of carbon atoms} \times \text{molecular weight number of carboxylate groups}}{100}$ of at least 500.

Kenbeek '001 discloses an ester from a reaction of a polyfunctional alcohol, a dimer fatty acid and a monofunctional alcohol having at least 14 carbons (thus

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overlapping the claimed range of 5 to 24) or an aliphatic monocarboxylic acid having from 7 to 14 carbons (C2 L62-67 thus falling within the claimed range of 5 to 24 carbons) and having a resulting kinematic viscosity at 100°C of 30 to 1000cSt (Abstract) Kenbeek '001 discloses that the dicarboxylic acid is used in dimerised form up to 80% by weight to be beneficial (C3 L25-30) and the remaining dicarboxylic acid is non-dimerized dicarboxylic acid. (C2 L56-65) See MPEP 2144.05(I): "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)." Kenbeek '001 also discloses that complex esters will have improved properties (C1 L58-65). Kenbeek '001 discloses that the use of polycarboxylic acid not comprising only dimmer acid is advantageous as it will make the ester more compatible with certain additive packages comprising sulphur and phosphorus (C2 L30-39).

It would have been obvious to a person having ordinary skill in the art at the time of invention to add use the dimerized dicarboxylic acid in an amount up to 80% and the remaining dicarboxylic acid of non- dimerized form as in Kenbeek '001 as this is the most beneficial and will form complex esters with improved properties and will be more compatible with additive packages comprising sulfur and phosphorus.

Modified Kenbeek discloses the claimed composition. As such, it will intrinsically possess the same physical characteristics including NPI value of at least 500. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima

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facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Kenbeek '013 discloses the composition used in a diesel engine (P2 L42-45 Kurt Orbahn testing DIN 51 382 as such it is added to the engine. The examiner notes that a diesel engine meets the limitation for an automotive engine). The base oil is an ester lubricant base such as glycerol tri-n-heptanoate, trimethylolpropane, 2-ethylhexyl dodecanoate (P3 L26-33) and the composition will therefore have a phosphorus level of no more than 0.08%.

13. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kenbeek (EP 0335013) as evidenced by Marchand et al. (GB1390439) and as evidenced by Croda Product Overview as applied to claim 15 above, and further in view of Young et al. (US 3,202,701)

Regarding Claim 21.

Kenbeek discloses the limitations set forth above which are expressly incorporated herein. Kenbeek also discloses an ester formed with neopentyl glycol and a dimer acid. (P3 L62). Since component (c) is optional, the limitations of this claim have been met.

Alternatively, Kenbeek does not expressly disclose to the oil wherein the resultant ester is the reaction product of the neopentyl glycol with dimer acid and azeleic acid.

Young et al. discloses a complex ester of a mixture of acids and neopentyl glycol which produces a lubricant which remains haze free at low temperatures and has heat

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stability with good viscosity. (C2 L30-37 and L53) The ester is formed by either a one state or two stage reaction (C4 L10-11). Young et al. discloses that the acid mixtures may comprise dicarboxylic acid and azelaic acid (C2 L56-65).

It would have been obvious to a person having ordinary skill in the art at the time of invention to add azelaic acid of Young et al to the reaction mixture of Kenbeek as Young teaches that said acid is useful in a complex ester mixture and will reduce haze at low temperature and impart heat stability with good viscosity.

Response to Arguments

14. Applicant's arguments filed November 18, 2009 have been fully considered but they are not persuasive in light of the new grounds of rejection under 35 USC 103 (a) above set forth.

15. Applicant argues that Kenbeek '001 is not directed toward reducing wear in an automotive engine and that since the ester composition of Kenbeek '001 also comprises and additive package for EP/AW it is not suitable by itself to reduce wear. The claim limitations are open ended as the component being added is defined as "comprising" and may therefore have additional components. MPEP 2111.03 The transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, un-recited elements or method steps. See, e.g., *Mars Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1376, 71 USPQ2d 1837, 1843 (Fed. Cir. 2004) Thus, the addition of an EP/AW additive does not distinguish the prior art from the claimed method. Further, the EP/AW additive is a phosphorus/sulfur additive and as set forth in the above rejection may comprise ZDDP

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which is also a permissible component (required by dependent claims and included in the examples in the Specification Table 1). As such, this argument is unpersuasive.

16. Applicant argues Marchand is directed toward a polyester used in a two stroke engine and not in four stroke automotive engines. The examiner notes that the claim limitation is not to a four stroke engine; further, two stroke engines may be automobile engines. Marchand discloses a similar ester to that of Kenbeek '001 and Kenbeek and the reference is used solely as an evidentiary reference to further establish the intrinsic kinematic viscosity will be within or overlap the claimed range.

17. Applicant argues the Overview reference of Croda used as an evidentiary reference in the rejection brought under Kenbeek does not overcome the prior arguments. Overview/Croda is offered as an evidentiary reference as it discloses the % of dimerization of the dicarboxylic acid used in the composition of Kenbeek.

18. Applicant argues the reference Shaub is directed toward reducing friction and not wear and further argues that Shaub requires an ester of polycarboxylic acid and glycol with an additional additive of a dithiocarbamate. Again, additional components are permissible given the open claim language of comprising. MPEP 2111.03 Shaub discloses the dithiocarbamate may be zinc dialkyldithiophosphate and will further impart improved anti friction qualities (C6 L16). This is the same additive which applicant claims to be added to the composition in dependent claim 11. Shaub is used to teach the ZDDP additive useful in lubricating oil comprising esters. Since the claimed method and composition is disclosed by Kenbeek in view of the cited secondary references, modified Kenbeek will provide the claimed anti-wear qualities.

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19. Applicant may submit evidence of unexpected anti-wear performance in support his position that the claimed subject matter performance is superior to that of the prior art. Applicant must consider whether any such submission is commensurate with the scope of the claims (i.e. showing a full range and combination of the claimed composition and its variants), and how it performs differently from the embodiments disclosed in the prior art and/or may further limit the claims in a way supported by the specification to distinguish the claims from the prior art.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAMELA WEISS whose telephone number is (571)270-7057. The examiner can normally be reached on Mon.-Thur. 8:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/pw/

/Glenn A Caldarola/
Acting SPE of Art Unit 1797